

HOW MANY LICKS DOES IT TAKE TO GET TO THE CENTER?



Have you ever wondered how many licks it takes to get to the core of a giant jaw breaker? 1, 2, 3...slurp. The earth is in some ways like a giant jaw breaker. It is composed of several layers: the crust, the mantle, and the core.

CRUST

What comes to mind when you think of the word crust? Perhaps it is the time old saying, "Eat your crust!" The earth's crust is a little different then the crust on a piece of bread. It is not soft and chewy, but it hard and composed of different minerals. The thin, outermost layer of the earth is called the crust. It makes up only one percent of the earth's mass. The continental crust is thicker than the oceanic crust. It can range from 25 km thick at the edges to 70 km thick near the center. The oceanic crust on the other hand is only about 7 km thick and considerably more dense. The crust and the uppermost part of the mantle make up the **lithosphere**, a solid region that is broken into plates. It is about 65 to 100 km thick.

MANTLE

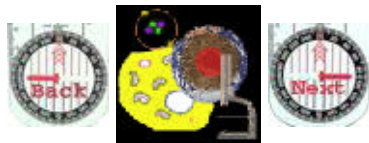
The mantle is the layer below the crust. It makes up almost two thirds of the earth's mass and is about 2900 km thick. The mantle is divided into two regions, the upper and lower sections. Directly below the upper section is the **asthenosphere**. Heat and pressure cause a small amount of melting to occur in the asthenosphere. While still solid, the asthenosphere is able to flow. The ability of a solid to flow is called **plasticity**. See "[What's the matter?](#)" for an activity to demonstrate plasticity. Since the asthenosphere is more liquid than the rest of the mantle, the broken lithosphere plates are able to "float" on it.

When the material in the asthenosphere is heated, it becomes less dense and rises. While the cooler material is more dense tends to sink. Circulating currents carry the warmer material up and the cooler material down. These circular currents in the asthenosphere are called **convection currents**. The circulating convection currents cause the plates to move.

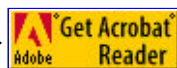


CORE

Below the mantle is the core, the center of the earth. It makes up nearly one third the mass of the earth. The core is also divided into two regions, the inner core and the outer core. From seismic or earthquake waves, scientists believe the outer core is a liquid and the inner core is a solid. The outer core is made of iron and is very dense. Scientists hypothesize that the circulation of the outer core causes the magnetic field around the earth. It is believed to be circulating in the counter-clockwise direction giving us the north pole in its present location. It switches about every million years. A record of this "switching" is recorded in the rocks both on land and in the ocean crust. See "[Go west young man! But which way is north?](#)" The inner core is made of solid iron and nickel. Many scientists believe it is kept in the solid state because of the extreme pressure from the other layers.



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